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AESTRACT

An articulation effort between secondary and postsecondary occupational education is described in this report as conducted by the Dallas County Community College District. After an introduction to the articulation project emphasizes the original goal of developing material necessary to award postsecondary credit for mastery at the secondary level, additional benefits of the project are cited. These included providing a base for a core curriculum, facilitating awarding credit for life experience, and assisting in developing and revising courses. Next, steps in the articulation process are described: (1) select programs for articulation using criteria such as high enrollment, local job market needs, availability at secondary schools, and responsiveness of directors to articulation; (2) identify and inform supervisors and participants; (3) complete task analyses; (4) define blocks (i.e., major subject areas), modules, and competencies, and identify core competencies to be required of every student in the program; (5) develop course equivalencies between postsecondary campuses and secondary and postsecondary schools; (6) share blocks, modules, and competencies with secondary teachers; (7) develop objectives to measure competencies; (8) develop articulation implementation procedures; and (9) assemble and print materials. Finally, general suggestions for articulation are provided. Appendices include course equivalencies, articulation procedures, and related materials for a welding program. (KL)

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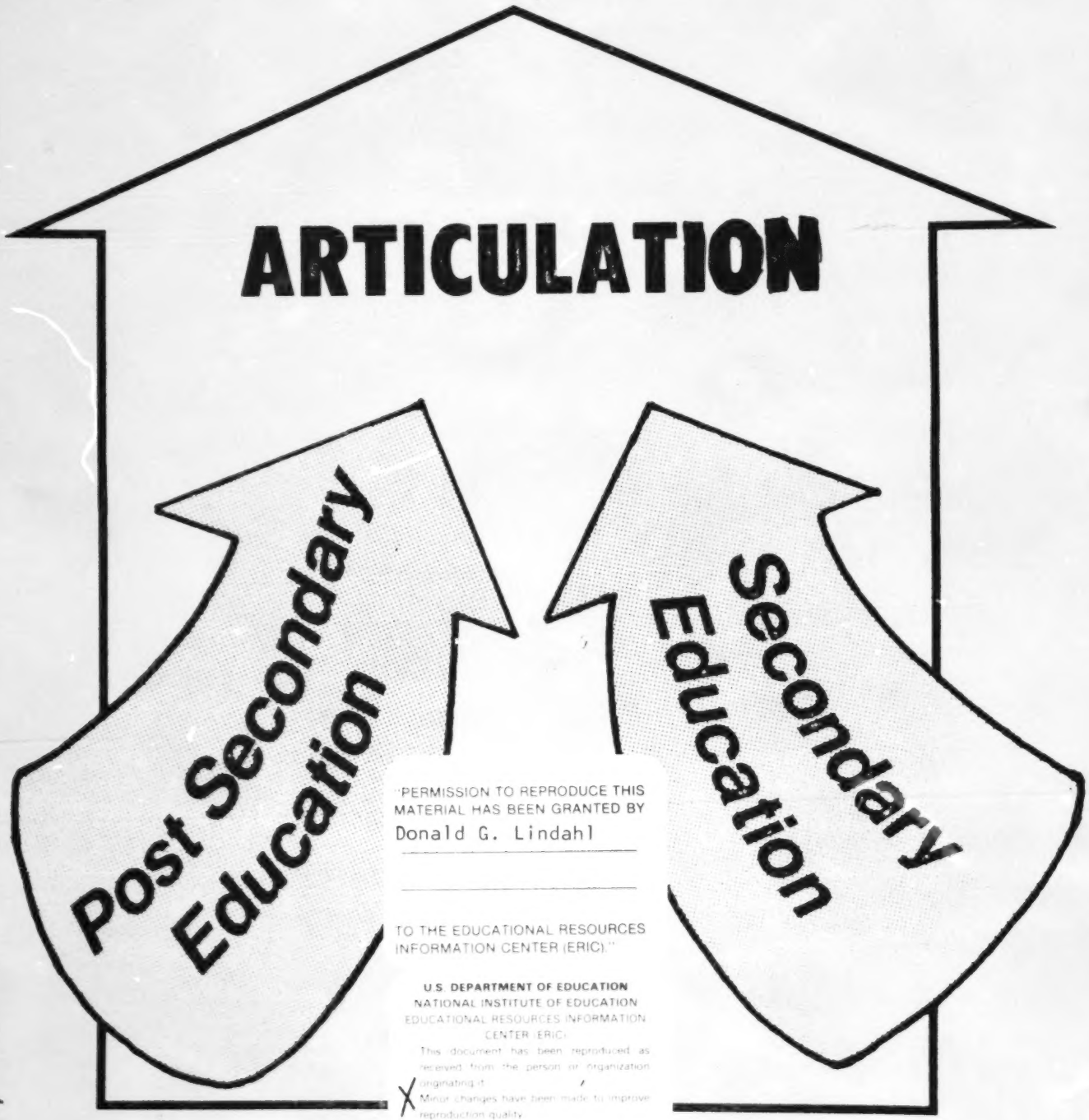

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DALLAS COUNTY COMMUNITY COLLEGE DISTRICT

JC 810 067

An Approach

to a One-School-Year

Technical/Occupational Program Articulation

between the

Secondary and Post-Secondary Levels

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Introduction To The Articulation Project

For several years educators have realized that problems exist in the adequate transfer of students from secondary to post-secondary education. This transfer process is especially difficult in the area of occupational education. Too often students enroll in college courses that duplicate the teaching of skills already mastered at the secondary level.

In 1978 Eastfield College, of the Dallas County Community College District (DCCCD), entered into an articulation effort designed to eliminate unnecessary duplication. Articulation is the name given to the process through which high school, college and industry or professional personnel reach agreement on the specifics of subject materials to be covered in occupational courses. Two occupational programs, Drafting and Design Technology and Office Careers, were chosen for articulation. Auto Mechanics was articulated earlier on a pilot basis and is now in use.

In 1979 Child Development and Welding Technology were articulated. Eastfield College served as the primary campus for this effort. However, all DCCCD campuses offering similar programs were involved along with twelve area independent school districts.

The DCCCD received a grant from the Texas Education Agency to articulate six more programs (Auto Body Repair and Painting, Building Trades-Carpentry, Digital Electronics, Legal Assistant, Ornamental Horticulture, and Medical Lab Technology) during the 1980-81 school year.

The major objective of the articulation effort is the preparation of a manual for each of the areas identifying the competencies a student must possess to receive credit for specified courses in the DCCCD. If a student demonstrates mastery at the secondary level, s/he will be granted equivalent credit in the DCCCD.

It is hoped that the articulation process can be expanded to other technical-occupational programs in the future.

Additional Benefits of the Articulation Process

Although the original goal of the Articulation Project was--and is--to develop the materials necessary to award equivalent post-secondary credit for mastery at the secondary level, the articulation process provides a number of additional benefits.

The competencies and their attendent objectives provide an extensive base for the development of a core curriculum. They also provide a clear set of requirements for awarding credit for life experience as well as a course outline for new teachers.

The procedures used in articulation can be employed in the development of new courses and the clarification and/or revision of present ones. The manual produced also serves as a most effective recruiting tool.

The meetings and intensive discussion of competencies and objectives encourage increased communication and respect among secondary and post-secondary personnel which should be beneficial to students at both levels.

The Student Profile is not only an efficient way to record a student's achievements but also provides prospective employers with an indication of the holder's skills and knowledge.

A more global benefit of the process and the utilization of the results should be improved, better coordinated training at both levels. This is bound to have positive consequences for students throughout their vocational training and should also increase the cost effectiveness of such training.

Steps in the Articulation Process

Select Programs

Those responsible for technical/occupational training at both the secondary and post-secondary levels should be consulted about programs to articulate.

The programs selected should have as many of the following characteristics as possible:

1. Attract a significant number of students at both the secondary and post-secondary levels
2. Prepare students for skills in demand in the local job market
3. Be available at as many secondary schools as possible
4. Be in fields where general agreement can be reached on the knowledge, skills, and attitudes required for competence
5. Be headed by people who understand and support the concept, elements, and possibilities of articulation, and are willing to take a close look at their programs and perhaps make some changes
6. Have available instructors who:

    A. Have a clear idea of their course requirements
    B. Can define their competencies and what it takes to demonstrate achievement
    C. Are organized and can meet deadlines
    D. Can provide leadership.

Identify and Inform Supervisors and Participants

The supervisors of the instructors in the programs selected should choose their participants considering the points listed above. They should also be reminded that no teaching time will be lost and that the articulation process provides many benefits for the teachers involved.

Once the participants have been identified, they should be given as much concrete information as possible about articulation and their responsibilities within the process. This can be done in a variety of ways, but the key points, expectations, and responsibilites should be in writing for each participant.

It is important that supervisors be consulted and kept informed, as their support is crucial to the success of the project.

Complete Task Analysis

If a task analysis of a program has not been completed within the last two years, such an analysis is the next step.

This is one of the side benefits of articulation, as there is staff whose specific responsibility it is to coordinate such an effort. It is also essential that the competencies to be identified be relevant in light of current industry needs.

Define Blocks, Modules, Competencies, and Identify Core Competencies

Using the results of the task analysis as a base, the post-secondary instructors identify the major subject areas in each program. These are called blocks and are related to existing or developing post-secondary courses. Each instructor is responsible for specific blocks. Modules, topics within each block, are then defined.

The third, and perhaps most critical, step is the identification of competencies (a specific piece of knowledge, a skill, or an attitude) required for competence within each module. Those which are absolutely required of every student should be identified as "core competencies." The participants need to consult with other members of their program's faculty before final decisions are made.

Develop Course Equivalencies

Once the blocks, modules, and competencies have been identified it is necessary--and possible--to develop course equivalencies between/among post-secondary campuses and, in some cases, between/among secondary and post-secondary schools. This, of course, requires official consultation and approval. (See attached example of Welding Technology Course Equivalencies.)

Share Blocks, Modules, and Competencies with Secondary Teachers

The work to this point is done by the post-secondary instructors, because it is their courses for which equivalent credit will be granted. It is now time for the secondary and post-secondary people to meet together to share the work that has been done.

Develop Objectives

As soon as everyone understands and agrees upon the competencies, the objectives (the specific ways to measure mastery of the competencies) must be carefully defined. This is done in small groups, each one responsible for certain blocks.

The small groups consist of both secondary and post-secondary instructors and are led by the post-secondary representative who did the initial work on those areas. It is clearly understood that the objectives must be those of the post-secondary institution; however, sharing their development with secondary teachers provides enrichment for the programs and students at both levels.

Develop Articulation Implementation Procedures

If procedures for granting a variety of non-traditional credit do not exist, it is necessary to develop and disseminate such procedures sometime before the articulation materials have been completed.

An ad hoc committee should be formed to develop the procedures for awarding equivalent credit through articulation. Because there are a number of people involved in the entire procedure, it is suggested that representatives from the following positions be included on the committee:

Post-Secondary
1. Vice-President of Instruction
2. Technical/Occupational Dean
3. Registrar
4. Non-traditional Credit Advocate
5. Counselor
6. Instructor

Secondary
1. Vocational Director
2. Vocational Counselor
3. Teacher

It is helpful if the members of this committee receive as much information as possible about their task and similar work from other institutions before the first meeting.

It is then possible for the group to plan the step-by-step procedures necessary for a student to receive credit through articulation within the structure of the institutions involved. It is vital that everyone involved in the process contribute to the planning and receive the final results. (An outline of the DCCCD Articulation Procedures is attached.)

Assemble and Print Manuals

The final step in the process is the preparation of materials for printing. This includes the development of a Student Profile, a form listing each competency with a system for recording mastery. (See attached Welding Student Profile.)

(Sample pages from the Welding Technology manual, the last three pages of this manual, illustrate the format of the DCCCD program articulation manuals.)

Additional Information, Thoughts, and Suggestions

1. The reader will note that no definite number of meetings or content of meetings have been defined. This is because groups work in different ways and at different speeds.

   It is suggested that a tentative timetable be established with the clear understanding that, although the work outlined above must be completed by a certain date, each group may reach that deadline in a different way. It is probable, however, that at least six three-hour group meetings, with individual work between, will be necessary to complete the materials.

2. It is helpful for students and instructors at both levels if the post-secondary institution sets specific policy about the level of mastery and number of competencies needed for credit.

   For example, the DCCCD has established the following policy for the granting of equivalent credit through articulation. The student must:

   A. Complete all the core competencies, those identified by the post-secondary instructors as absolutely required. (These are preceded by asterisks on the sample page from the Welding manual.)

   B. Complete 80% of the competencies for a course, including all the core competencies.

   C. Demonstrate mastery at the C or better level.

3. Wherever possible, it is important to avoid naming specific methods of teaching. Define the desired outcomes, and leave the approach to them to individual teachers. This makes it possible to use the materials in a wide variety of teaching situations.

4. It is important that it be made clear from the start that the post-secondary instructors will assume a role of leadership, as it is their courses for which equivalent credit will be granted.

5. If all the post-secondary instructors in a program are not formal participants in the articulation process, emphasize early, and remind the instructors and their supervisors, that it is crucial for the non-participants to be consulted frequently before any final content decisions are made.

6. Provide as much concrete information to all involved in advance as often as possible.

7. Have tentative tasks, competencies, objectives, course equivalencies, articulation procedures, etc. available for the group as a point of departure.

8. Survey the group before planning group meeting times. Of course, a time must be found when all the post-secondary instructors are available.

9. Remind participants of meetings, deadlines, etc. a week or so in advance.

10. Plan to have refreshments available for group meetings.

11. Organize meetings, materials, etc. as carefully as possible.

12. Keep supervisors informed of progress, problems, etc.

13. Work in small groups as often as possible, but be sure that all those involved are kept informed of everyone's work.

14. Ask the post-secondary instructors to come to their meetings with the secondary personnel with tentative objectives ready for refinement.

15. Be prepared for possible resistance, especially at the post-secondary level. The articulation concept is a new one to many people and may be threatening to some.

16. Keep a detailed log/file of all memos, letters, decisions, meetings, etc. relating to the articulation project.

17. Remember that the materials produced have a limited lifespan. Changes will be required if they are to remain current and effective. However, the framework and methodology for articulation will be in place for future work.

18. Lastly, it is recommended that an articulation project director have the following qualifications:

    A. Prior teaching experience, preferrably at the post-secondary level

    B. Knowledge of technical/occupational programs, practices, and principles

    C. Strong skills in human relations, communication, organization, problem-solving, management, and writing.

    It is not necessary that the director possess knowledge of the field to be articulated, just that s/he be able to elicit and coordinate the information from those who do.

WELDING TECHNOLOGY

Course Equivalencies

BLOCK	EF	MV
1. Oxyfuel	102	140 120 or 141 142
2. Introduction to Shielded Metal Arc Welding - Plate	103	143 121 or 144 145
3. Advanced Shielded Metal Arc Welding - Plate	105	241
4. Introduction to Shielded Metal Arc Welding - Pipe	104	240
5. Advanced Shielded Metal Arc Welding - Pipe	105	246
6. Introduction to Gas Metal Arc Welding - Plate	201	147
7. Advanced Gas Metal Arc Welding - Plate	204	244
8. Introduction to Gas Metal Arc Welding - Pipe	201	See below
9. Advanced Gas Metal Arc Welding - Pipe	204	See below
10. Introduction to Gas Tungsten Arc Welding - Plate	202	149
11. Advanced Gas Tungsten Arc Welding - Plate	203	242
12. Introduction to Gas Tungsten Arc Welding - Pipe	202	See below
13. Advanced Gas Tungsten Arc Welding - Pipe	203	See below
14. Pattern Layout	130	130
15. Basic Welding Metallurgy	150	150

Mountain View does not offer specific courses in Gas Metal Arc Welding - Pipe and Gas Tungsten Arc Welding - Pipe. However, a student may receive credit for these through WE 248 and WE 250. See the Welding Technology instructor.

NOTE: These course equivalencies and numbers are valid for the 1980-81 school year. They may change in succeeding years.

Articulation Procedures

1. High school personnel notify students of the opportunities available to them through the non-traditional learning policy.

2. a. Students currently enrolled in high school request the Career Program Articulation form from the high school occupational instructor, master the appropriate competencies and obtain instructors' signature on the form.

   b. Students who have been out of high school three years or less obtain Career Program Articulation forms from the college advocate or high school instructor, secure the appropriate high school signatures, and return the form to the college Registrar.

3. Competency form is certified and submitted by the high school to the college Registrar's office by the same procedure as the official transcript is handled.

4. Upon receipt of the student's Application for Admission form by the college Registrar's office, the competency form is placed in the student's permanent record file, and the college advocate is notified.

5. Registrar sends the student a form letter stating:

   a. The equivalent college credits to be awarded and transcripted upon successful completion (C grade or better) of twelve (12) semester credit hours with six (6) credit hours in the student's major occupational area at a DCCCD college. The six (6) credit hours in the student's occupational area will be selected, by the student, from a list of approved courses developed by the faculty of her/his major area.

   b. The advocate's name and telephone number for any additional questions the student may have.

6. The Registrar retains the original copy of the Career Program Articulation form and the form letter in the student's permanent file.

7. The student brings the form letter with him for pre-registration counseling at the college.

DALLAS COUNTY COMMUNITY COLLEGE DISTRICT
WELDING TECHNOLOGY CAREERS PROGRAM ARTICULATION
STUDENT PROFILE

School Stamp or Seal

School _____

Verification Signature _____
School Official

Date _____

Student's Name _____ Birthdate _____ SS# _____

Address _____ City _____ State _____ Zip _____

	Date	Instructor's Signature	For College Use Only: Equivalent DCCCD Course
I. OXYFUEL			
Theory			
01.01 Describe types & uses of flame *			
01.02 Describe fuel gases *			
01.03 Define oxyfuel cutting terms			
01.04 Define brazing terms			
Shop Safety			
01.05 Pass safety test *			
01.06 List safety regulations for storing gas cylinders			
01.07 Demonstrate personal protection			
01.08 Discuss possible welding mishaps			
Equipment			
01.09 Identify oxyfuel equipment			
01.10 Discuss labeling & inspecting regulations for gas cylinders			
Setup			
01.11 Set up oxyfuel equipment *			
Cutting			
01.12 Make freehand cuts *			
01.13 Cut straight line freehand on thin metal *			
01.14 Cut straight line freehand on thick metal *			
01.15 Pierce & cut ½" diameter hole freehand *			
01.16 Pierce & cut 1" diameter hole freehand *			
01.17 Make beveled freehand cut			
01.18 Make guided beveled cut			
01.19 Make automatic cuts			
01.20 List reasons for poor cuts			
Welding Metal Plate			
01.21 Weld beads without filler rod *			
01.22 Weld beads in flat position *			
01.23 Weld beads in vertical position *			
01.24 Weld butt joint in flat position *			
01.25 Weld lap joint in flat position *			
01.26 Weld tee joint in flat position *			

	Date	Instructor's Signature	For College Use Only Equivalent DCCCD Course
1. OXYFUEL (cont.)			
01.27 Weld outside corner joint in flat position			
01.28 Weld square butt joint in vertical position			
01.29 Weld lap joint in vertical position			
01.30 Weld tee joint in vertical position			
01.31 Weld lap joint in horizontal position			
01.32 Weld tee joint in horizontal position			
01.33 Weld lap joint in overhead position			
01.34 Weld tee joing in overhead position			
01.35 Weld beveled butt joint in vertical position			
01.36 Weld beads in flat position using MAPP			
01.37 Weld beads in vertical position using MAPP			
01.38 Weld butt joint in flat position using MAPP			
01.39 Weld lap joint in flat position using MAPP			
01.40 Weld tee joint in flat position using MAPP			
01.41 Weld butt joint on cast iron			
Welding Metal Pipe			
01.42 Weld butt joint in horizontal rolled position			
01.43 Demonstrate forehand welding in horizontal fixed position			
01.44 Demonstrate backhand welding in horizontal fixed position			
01.45 Demonstrate backhand welding in vertical position			
Brazing			
01.46 Braze beads on mild steel			
01.47 Braze butt joint on mild steel			
01.48 Braze lap joint on 1/8" mild steel			
01.49 Braze lap joint on 16 gague mild steel			
01.50 Braze tee joint on mild steel			
01.51 Fill ½" diameter hole			
01.52 Fill 1" diameter hole			
01.53 Braze heads on mild steel using MAPP			
01.54 Braze lap joint on mild steel using MAPP			
01.55 Braze beads on cast iron			
01.56 Brazed butt joint on cast iron			

The student must complete the 23 core competencies (*) plus 22 others

Competencies
for the
Welding Technology Program

The Welding Technology competencies are grouped into 15 blocks as follows:

1. Oxyfuel
2. Introduction to Shielded Metal Arc Welding - Plate
3. Advanced Shielded Metal Arc Welding - Plate
4. Introduction to Shielded Metal Arc Welding - Pipe
5. Advanced Shielded Metal Arc Welding - Pipe
6. Introduction to Gas Metal Arc Welding - Plate
7. Advanced Gas Metal Arc Welding - Plate
8. Introduction to Gas Metal Arc Welding - Pipe
9. Advanced Gas Metal Arc Welding - Pipe
10. Introduction to Gas Tungsten Arc Welding - Plate
11. Advanced Gas Tungsten Arc Welding - Plate
12. Introduction to Gas Tungsten Arc Welding - Pipe
13. Advanced Gas Tungsten Arc Welding - Pipe
14. Pattern Layout
15. Basic Welding Metallurgy

Each block is color-coded. Each block is divided into modules, and each module contains the competencies required in that area.

Each competency is followed by its objective, the specific way achievement of that competency is to be measured. The objectives do not appear on the Student Profile sheet.

12. INTRODUCTION TO GAS TUNGSTEN ARC WELDING - PIPE

MODULES

Theory

Shop Safety

Setup

Welding Procedures

MODULE: Theory

Competencies and Objectives

12.01 * Identify and describe shielding gases

Objective:
The student will list the penetration characteristics and uses of the following shielding gases and gas mixtures.

1. Argon
2. Helium
3. Carbon dioxide
4. Argon + Oxygen
5. Argon + Helium
6. Argon + Carbon dioxide

12.02 Identify and describe tungsten end shapes

Objective:
The student will identify the three types of tungsten end shapes from examples and describe the properties and applications of each according to the American Welding Society.

12.03 List and describe currents and polarities

Objective:
The student will list the types of currents and polarities and describe the uses of each according to the American Welding Society.

12.04 Describe American Welding Society numbering system

Objective:
The student will describe the AWS numbering system for GTAW filler rods.

12.05 List filler metals used for GTAW

Objective:
The student will list the filler metals for the following metals used in GTAW.

1. Aluminum
2. Copper
3. Nickel
4. Stainless Steel
5. Steel
6. Tungsten

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